

## **CHECKLIST FOR PREPARING PLANS AND CONSTRUCTION CHECK OF A POND OR GRADE STABILIZATION STRUCTURE**

### **Planning Data**

- ☐ 1. Discuss site with landowner to define what the objectives are and how they apply to the resource management plan.
- ☐ 2. Prepare drainage area map on USGS topographic map data or other appropriate maps or photos. Indicate property boundaries on this map.
- ☐ 3. Review site to assure it is reasonable and feasible.
- ☐ 4. To determine hazard class of structure, fill out Form MO-ENG-46, MO-ENG-C46 or MO-ENG-C82 in accordance with National Engineering Manual (NEM) and Missouri Supplement MO 520.23 and MO 520.28.
- ☐ 5. Review preliminary findings with landowner, if needed.

### **Field Data and Survey Notes**

The following is a list of the minimum data needed:

- ☐ 1. Topographic survey of dam area, auxiliary spillway area and pool area to top of dam elevation or above.
- ☐ 2. Profile along centerline of Pond Dam or structure.
- ☐ 3. Profile along centerline of principal spillway to 100' downstream of structure.
- ☐ 4. Locate and survey as needed any pertinent features such as roads, property lines, etc.
- ☐ 5. Soil investigation logs and notes if needed. See National Engineering Manual (NEM) and Missouri Supplement MO 531.21 and 531.23.
- ☐ 6. Inspect ingress road and work area for utilities.
- ☐ 7. Complete Form MO-CPA-56. If cultural resources exist at the site, notify the Area Cultural Resource Coordinator (ACRC).

### **Design Data**

Record on appropriate engineering paper, forms, etc.

The following is a list of the minimum required design data:

- ☐ 1. Estimate dam height and drainage area to determine appropriate spillway design criteria in accordance with appropriate practice standard.
- ☐ 2. Determine peak runoff from the contributing area for the design storms selected.
- ☐ 3. Develop topographic map and compute surface area for appropriate contours.
- ☐ 4. Develop a stage-storage curve for the site. On some sites a principal spillway discharge curve may be needed. Normally, the "Pond Program" will do this.
- ☐ 5. Determine the pipe spillway design by flood routing using the "Pond Program" or equivalent.
- ☐ 6. Design auxiliary spillway using the "Pond Program" or equivalent.
- ☐ 7. Determine class of structure in accordance with MO 501.09 of National Engineering Manual.
- ☐ 8. Determine if structure is of inventory size in accordance with MO 520.21(f)(1,2&3) of National Engineering Manual.
- ☐ 9. Compute earthwork quantities.
- ☐ 10. Prepare checkout notes.
- ☐ 11. Review, initial and date approval of design.

**Construction Plans and Specifications**

- ☐ 1. A set of drawings containing more than 5 drawing sheets should have a coversheet. Drawings should show the following as a minimum:
  - a. Plan view of dam, auxiliary spillway and pool area.
  - b. Pertinent property lines, roads, TBM's, etc.
  - c. Construction notes.
  - d. Soil logs if applicable.
  - e. Bill of materials.
  - f. Cross section through dam at centerline of principal spillway.
  - g. TBM descriptions.
  - h. Profile along centerline of auxiliary spillway and cross section of auxiliary spillway.
  - i. Pipe inlet details, Anti-seep collar details, Trash rack details, etc..
- ☐ 2. All sets of plans shall include the appropriate construction specifications.
- ☐ 3. Use standard drawings when possible.
- ☐ 4. Show special design features such as stock watering systems, dry fire hydrants, etc..
- ☐ 5. Include seeding requirements in set of plans.
- ☐ 6. Approve plans and specs. by initialing and dating at least cover page
- ☐ 7. Supply landowner with Operation and Maintenance Plan.
- ☐ 8. Notify landowner of need to contact Missouri One Call or utility companies to locate and mark utilities prior to construction. See NEM, MO 503.4, 503.5 and 503.6.
- ☐ 9. Conduct pre-construction conferences for large ponds and new contractors.
- ☐ 10. Evaluate need to obtain a 404 permit, 401 permit or storm water discharge permit.

**Construction Check Data**

The Construction check is as shown in MO 512.51 (b)(3) of the National Engineering Manual. For further details, see Grade Stabilization Structures with Pipe Outlet in Construction Planning Procedure Handbook. "As-Built's" are required on all class V-VIII dams and all inventory size dams in accordance with MO 512.51(a)(5) of the National Engineering Manual. The following is a list of items needed for construction check.

- ☐ 1. A profile of the top of the dam.
  - ☐ 2. A cross-section of the auxiliary spillway at the control section.
  - ☐ 3. A profile along the centerline of the auxiliary spillway.
  - ☐ 4. A cross section of dam showing pertinent elevations. This may be taken at location of principal spillway.
  - ☐ 5. Show inlet and outlet elevations of principal spillway.
  - ☐ 6. The diameter, length, and type of material for the principal spillway.
  - ☐ 7. Are appurtenances to the principal spillway as shown on drawings?
  - ☐ 8. By visual observation, is grade of outlet channel stable and does it have an adequate cross section for capacity?
  - ☐ 9. Notes and measurements to show that any special design features such as stockwatering systems, drains, etc. are as shown on drawings.
  - ☐ 10. Does seeding and fencing conform to plans and specifications.
  - ☐ 11. Show any revisions to bench mark description and elevation on the plans.
  - ☐ 12. Sign and date check out notes to include statement that practice meets or exceeds plans and specifications.
- Complete Form MO-ENG-C74.

- ☐ 13. Record in technician assistance notes (Case file), all construction activities inspected, i.e. Site prep., Core trench excavation/backfill, pipe placement/backfill, soil moisture conditions, compaction methods provided, etc.
- ☐ 14. If the overall height of dam is greater than 30 feet but less than 34 feet, the Missouri Dam Safety Council may need to be contacted to measure the overall As-Built height. If the site is in this height range contact the Area Engineer.

**For Sites Requiring “As-Built”**

- ☐ 1. Do construction check as previously shown.
- ☐ 2. Mark drawings “As-Built” and show any deviations from plans and specifications. Show on front page of drawings; name of contractor, date completed, name of construction inspector and name of person preparing “As-Built”.
- ☐ 3. Have person approving the design review the “As-Built”.
- ☐ 4. Give co-operator a copy of “As-Built” and place a copy in co-operators folder.